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## **Report on transnational workshop for The North Sea Transport Research and Development Network**

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EC INTERREG IIIB NORTH SEA PROGRAMME

# SUTRANET

REPORT ON:

TRANSNATIONAL WORKSHOP FOR  
THE NORTH SEA TRANSPORT RESEARCH AND  
DEVELOPMENT NETWORK  
(WORK PACKAGE 1)

Held at:

Helnan Phønix Hotel  
Vesterbro 77 Aalborg, Denmark  
Friday 27 October 2006

Reported by Aalborg University  
Hans Henrik W. Johannsen  
Leif Gjesing Hansen  
Jørgen Kristiansen  
December 2006

SUTRANET Partners
Aalborg University (AAU), Denmark
FDT, Denmark
ISL, Bremen Germany
Institute of Transport Economics (TØI), Oslo Norway
SINTEF, Norway
Fachhochschule Kiel (FHK), Germany
Møreforskning, Molde Norway
IVL, Gothenburg Sweden
Napier University, Edinburgh Scotland
Erasmus University, Rotterdam The Netherlands

## 1. AIM OF THE WORKSHOP

This workshop was one of the planned transnational workshops within the SUTRANET project. The aim of the workshop was to present the status and results of the Work Package 1 (WP1) activities and outputs so far, to exchange findings, to identify the main issues to address, and to specify the remaining activities including any corrective measures.

The objective of WP1 is to establish a sustainable research and development network and improve the decision-making basis by elaborating the first step of a transport information system for the North Sea Region. WP1 will also specify the framework conditions and strategies for policies and decisions concerning infrastructure and commercial investments related to intermodal goods transport in the region.

The partners involved in WP1 reported on their findings and contributions related to the topics within WP1 - referring to the partner specifications agreed upon in May-June 2006.

## 2. PARTICIPANTS

The participants are listed below. They represented six of the ten partners in the SUTRANET project. In addition, the Department of Maritime Research and Innovation at University of Southern Denmark was invited to make a presentation related to the modelling and scenario topics.

AAU - Aalborg University, Department of Development and Planning:

- Leif Gjesing Hansen,
- Hans Henrik W. Johannsen,
- Jørgen Kristiansen,
- Susanne Løøw, SUTRANET secretary

Napier University, Transport Research Institute:

- Professor Alf Baird

IVL – Swedish Environmental Research Institute:

- Dr. Åke Sjödin

TØI – Institute of Transport Economics, Oslo

- Olav Eidhammer

Fachhochschule Kiel:

- Susanne Neumann

University of Southern Denmark, Department of Maritime Research and Innovation:

- Jacob Kronbak

FDT:

- Michael Laugesen

### 3. PROGRAMME

The workshop programme is presented below. As the programme reflects, the workshop was carried out as a number of presentations followed by discussions in the workshop group.

#### **Thursday (26 October 2006):**

20.00 Informal gathering in the Helnan Phønix Hotel lobby.

#### **Friday (27 October 2006):**

9.00 **Welcome and introduction** Hans Henrik W. Johannsen, AAU

9.15 *Presentations including questions and specific comments:*

9.15	<b>Statistics and database units</b>	Jørgen Kristiansen, AAU
9.40	<b>Motorways of the North Sea</b>	Alf Baird, Napier University
10.15	<i>Coffee/tea break</i>	
10.30	<b>Transport flow modelling and scenario building</b>	Jørgen Kristiansen, AAU
11.10	<b>GIS presentation of flow patterns</b> <b>Case: Esbjerg – Zeebrugge</b>	Jacob Kronbak, SDU
11.30	<b>E-learning module: environmentally friendly maritime transport</b>	Susanne Neumann, FHK Kiel
11.40	<b>Discussion and comments (group work)</b>	

12.30 *Lunch break*

14.00 *Presentations including questions and specific comments (continued):*

14.00	<b>Environmental impact assessment</b>	Åke Sjödin, IVL
14.40	<b>Transport corridor and stakeholder interviews</b>	Leif Gjesing Hansen, AAU
15.00	<i>Coffee/tea break</i>	
15.30	<b>Final comments and conclusions with a view to spatial development perspectives</b>	Hans Henrik W. Johannsen, AAU

19.00 *Dinner/buffet at Helnan Phønix Hotel*

#### **Saturday (28 October 2006):**

A visit was arranged to the Aalborg Marine Museum in the morning (10 a.m.).

**Photos from the workshop:**



## 4. WORKSHOP PRESENTATIONS

The workshop revolved around a series of presentations covering a wide range of topics related to work package 1. These presentations can be viewed and downloaded from the SUTRANET website: [www.sutranet.org](http://www.sutranet.org).

### Summary

The presentation of the topic **statistics and database units** pointed out the need to elaborate a first step of a common information system for unitised goods transport flows in the North Sea Region. A particular focus is on Ro-Ro and container handling via North Sea ports and maritime routes. The databases will cover the UK East coast, Norway, Denmark, the Sweden Kattegat Coast, Germany (North Sea and Baltic Sea) and major container ports in the Netherlands/Belgium. Some findings and recommendations were summarised in order to harmonise the statistics reporting among the North Sea region countries.

The **motorways of the North Sea** issue relates to WP2, but the presentation accentuated the strategic importance of how the motorway of the sea concept is implemented in the North Sea Region. The presentation pointed out the needs to clarify the “motorways of the sea” concept in the North Sea context, to improve mobility and accessibility of peripheral areas in the North Sea Region, and to identify particular maritime routes and technologies to ensure commercial viability of the services. A specific precondition is how to introduce a level playing field between maritime transport and heavily subsidised overland infrastructure, e.g. by introducing government subsidies to maritime transport.

The presentation of the **transport flow modelling and scenario building** topic pointed out the need to develop some framework guidelines for modelling and how to illustrate the scenario building methodology through a case study. The aim is to improve the basis for decisions on policy measures and infrastructure investments in the transport sector, in order to facilitate the smooth and sustainable handling of unitised goods flows.

The presentation of **flow patterns** (case: Esbjerg-Zeebrugge) was related to the modelling and scenario building topics. It had the aim to illustrate the use of GIS for modelling and visualisation of cost-competition between land-based and maritime routes. The presentation also illustrated a methodology for modelling of transport costs that enables a comparison between alternative mode and route options under different future assumptions concerning the transport system, and without a need to rely on very costly and time consuming modelling exercises and data requirements.

The development of an **e-learning module to train** people engaged in intermodal transport operations has been developed under WP4 (training programme development) with the aim to introduce cost-competitive and environmentally friendly transport solutions. The presentation related to WP1 in the sense that improved competence at the practical level is a precondition for strategic development in the part of the transport sector serving unitised goods flows.



The presentation of **environmental impact assessment** stressed the need to integrate environmental concerns in freight transport solutions in the North Sea Region. The aim of this topic is to provide some assessment tools for assessment of the environmental impact in each particular port, and on specific maritime routes, depending on the choice of technology and the amount of traffic.

The presentation of **stakeholders' view on transport corridors** and intermodal transport solutions was based on a range of interviews carried out among regional administrations, port organisations and transport operators in southern Norway and Jutland. The aim was to get the stakeholders' view on the possibilities and barriers in the Jutland corridor including the direct routes between Norway and the Continent, and about the potential development of intermodal freight transport solutions including the combination of sea, road and rail. The presentation identified the main issues and preliminary conclusions to be discussed at a user group workshop in January/February 2007.

Finally there was a summing up of the major findings and conclusions following the presentations and discussion. Together with the collected comments they will be integrated in the planned papers and reports.

## **The Presentations**

Hans Henrik W. Johannsen of Aalborg University began the workshop with a short introduction to the various topics of the workshop and his introduction to the workshop with a fervent wish that all the participants of the workshop would have a good and productive workshop.

Jørgen Kristiansen of Aalborg University then proceeded to outline the preliminary findings from the project aimed at elaborating on a first step for creating a common information system for unitised goods transport flows and traffic in the North Sea Region.

Alf Baird of Napier University in his presentation concentrated on giving a brief status report on his work on "Motorways of the Sea" in the North Sea Region. This included the preliminary findings of the MoS User Groups in Norway and Scotland with the emphasis on the Norwegian contributions. The possibility of new routes from Norway through the British Isles to the continent and from Norway to the UK were presented and discussed.

Jørgen Kristiansen of Aalborg University invited the workshop participants to a discussion concerning the overall framework guidelines for transport flow modelling. Using the cases of the Norway-Jutland-Continent Corridor and the Rotterdam Port Development, ports involved, relevant routes, modelling network, zoning principles and model variables were presented and discussed. Alternative scenarios including a baseline scenario, as well as different intermodal development scenarios with or without regional integration were put forward, and various forecasting principles were discussed.

Jacob Kronbak from the University of Southern Denmark demonstrated the use of GIS for modelling and visualising the cost-competition between land and sea transport. After a short introduction of the newly developed Spatial Unfolding of Costs (SUC) tool, a demonstration of

the tool was presented where a land based transport chain was compared to a multimodal transport chain involving the sea-link between Esbjerg and Zeebrugge.

In her presentation Susanne Neumann from Fachhochschule Kiel unfolded an overview of the e-learning module “Environmentally friendly maritime transport”, which FHK has developed a first draft concept of. With a special emphasis on “Institutions for environmental protection in shipping”, “Environmental issues in maritime transport”, and “Sustainability”, a preliminary draft version of an e-learning concept covering these issues was presented and discussed.

Åke Sjödin from IVL took the workshop participants on a historical tour of the Port of Gothenburg before outlining the generic environmental aspects, which needs to be considered in EIA’s conducted on transports in the North Sea Region. Preliminary results from an Environmental Impact Assessment for the Port of Gothenburg were presented and discussed in two scenarios; a baseline scenario with no port expansion, and a port expansion scenario with a doubling of the harbour traffic within a ten-year frame.

Leif Gjesing Hansen from Aalborg University presented the tentative results and conclusions from interviews on transport corridors and intermodal transport solutions conducted among selected key stakeholders in the transport corridor of Jutland (Nordic Link). Port-, train-, and ferry operators as well as forwarders and road haulage firms were interviewed with the focus being on how decision-making on logistics and transport affects the intermodal configuration of the Jutland Corridor and vice versa.

Taking his cue from the previous presentations Hans Henrik W. Johannsen gave a status report on the progress of work package 1. Re-visiting the specified aims of WP1, Hans Henrik W. Johannsen indicated that most aims were on the way to being fulfilled, although a certain amount of work still needed to be covered. Tentatively, a sixth aim of exploring the possibilities and barriers for the development of intermodal transport systems for freight transport between Scandinavia and the Continent via the transport corridor of Jutland could be identified, in addition to the designated existing five overall aims of WP1.

## 5. FINDINGS AND RECOMMENDATIONS

### **(a) Statistics and Database Units**

Aalborg University has - in the overall aim of elaborating a first step of a common information system for unitised goods transport flows and traffic in the NSR, with a particular focus on goods handling via North Sea ports and maritime routes - received contributions from TØI, Napier University, Erasmus University and ISL. Databases for unitised goods flows include Ro-Ro (including Ropax) and container traffic have been compiled, and a database structure that enables comparison and combination between NSR countries has been set up.



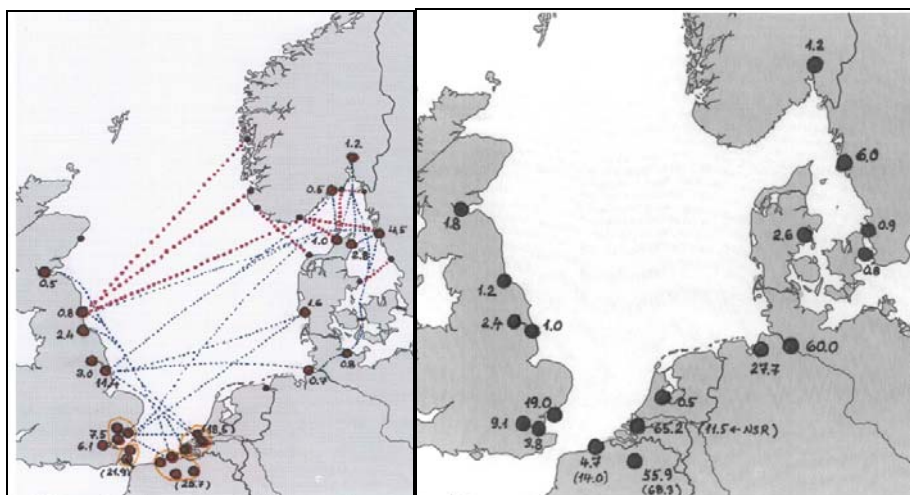


Figure 1: North Sea Ro-Ro Ports and North Sea Container Ports over 0.5 million tonnes in 2004

This includes databases for the eastern coast of the UK, Norway, Denmark, the Kattegat coast of Sweden, Germany and the Netherlands/Belgium.

Several problems have been identified in building and compiling the relevant databases. These include the following:

1. Some countries in the NSR have no systematic breakdown of Ro-Ro traffic on accompanied and unaccompanied trailers.
2. The NST/R (NST 2000) commodity classification does not fit to the reporting on unitised goods flows.
3. Geographical distribution of container traffic at port level is reported but often not published.
4. Only UK distinguishes between feeder (short sea) and deep sea container traffic at port level.
5. The share of container transshipment is not reported.

The preliminary work into statistics and database units lead to the following tentative recommendations.

1. Include a systematic reporting of semi-trailers at route level, as it is done in the UK.
2. Report Ro-Ro freight ferry traffic at the route level – comparable to what some countries are doing for Ropax routes.
3. Establish a systematic reporting of container transshipment and short sea traffic.
4. Publish the geographical distribution of container traffic at port level.

The remaining tasks, which fall under this topic, are to receive additional statistical inputs from Germany and the Netherlands/Belgium, in order to harmonise the statistics reports and papers, and in order to be able to compile a synthesis paper on this subject.

## (b) Motorways of the Sea

Alf Baird began his presentation by giving a status report on Work Package 2. Most targets are being met, and especially the inputs from the MoS user groups have yielded valuable new insights into possible new short sea shipping routes.

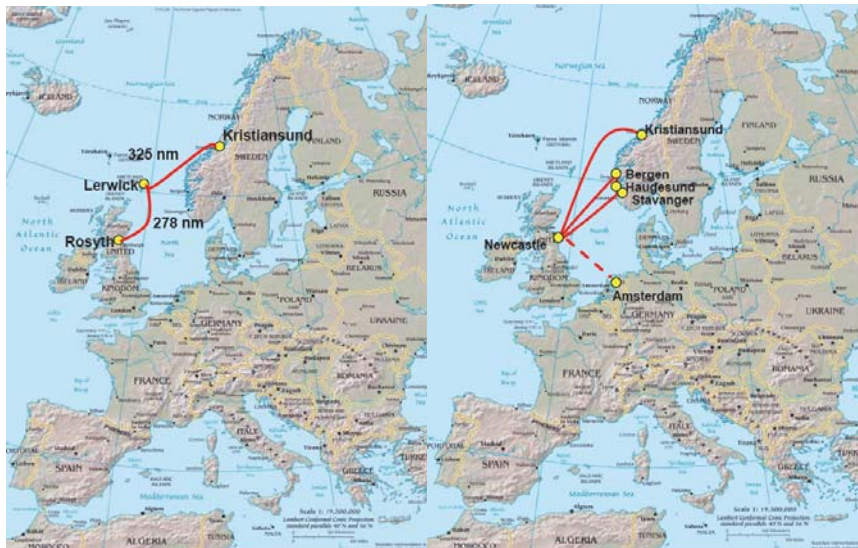


Figure 2: Potential new routes in the North Sea Region?

The Orkney Island as a possible venue for a transnational MoS Conference was discussed and decided upon. The Conference will be held in Kirkwall in the beginning of February 2007.

## (c) Transport Flow Modelling and Scenario Building

In order to facilitate policy and investment decisions, one of the more important aims of Work Package 1 within the SUTRANET project is to elaborate on some framework guidelines for transport flow modelling, and to illustrate the scenario building methodology.

Based on the cases of the Norway-Denmark-Continent Corridor and the Rotterdam Port Development, Aalborg University with valuable contributions from SINTEF, TØI and Erasmus University has begun the development of transport flow modelling and scenario building.

Concentrating on regional goods flows between Norway and Jutland (Denmark) - Ro-Ro and Ropax flows between Norway and the Continent and container feeder flows between Norway and the continent - various quantitative and qualitative variables have been suggested to be incorporated into the modelling framework, and scenarios are being set up.

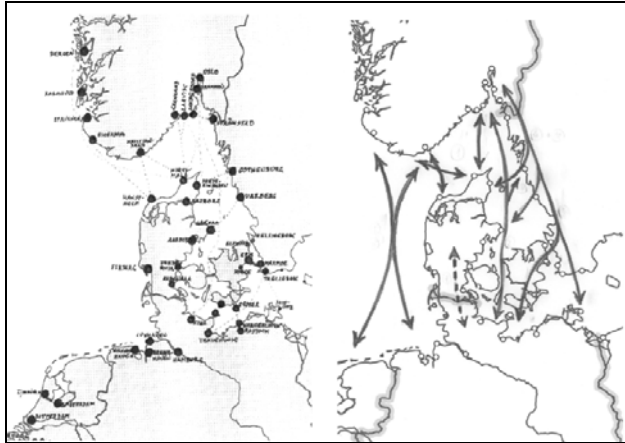


Figure 3: Possible ports and flows in the Norway-Denmark-Continent transport corridor.

The suggested scenarios involve a baseline (or “business as usual”) scenario, and two intermodal development scenarios; one based on regional integration in the corridor, and one based on regional disintegration. All scenarios are run with a low and a high economic growth rate.

Although the overall setup of the scenario building is in progress, several questions concerning the modelling network, the model zoning, and the model variables remain.

#### (d) GIS Presentation of Flow Patterns – Case: Esbjerg-Zeebrugge

Jacob Kronbak from the Department of Maritime Research and Innovation at the University of Southern Denmark has for some time been working on the development of a Spatial Unfolding of Costs (SUC) tool, that can model and visualise the supply of a multimodal transport system.

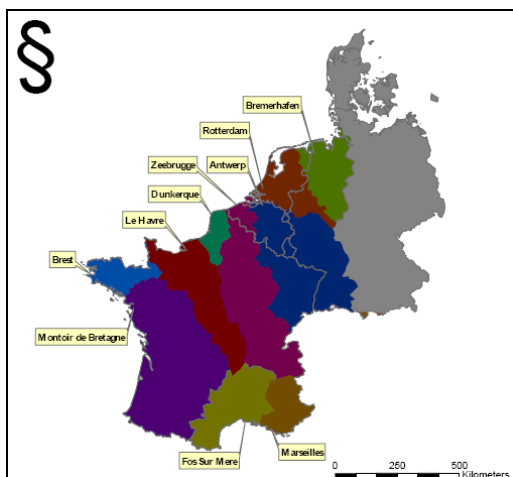


Figure 4: Least cost port hinterlands – Example of one use for the SUC tool.

This includes the illustration of transport costs and competitive relations between modes within freight transport.

Some of the key functions of the newly developed SUC tool include the modelling of drive/rest regulations for road transport, cost placement at both nodes and links in the designated modelling network, and the possibility of modelling almost all kinds of differentiated costs.

Using the case Esbjerg-Zeebrugge, the SUC tool was used to model the costs of transporting 2 TEU from Billund in Denmark to the western part of Europe using either a land based transport chain or a multimodal transport chain using the sea-link between Esbjerg and Zeebrugge.

### (e) E-Learning Module: Environmentally Friendly Maritime Transport

In cooperation with the REMARCC II Project, the University of Applied Sciences in Kiel laid the groundwork to the development of an E-learning module focusing on environmentally friendly maritime transport.

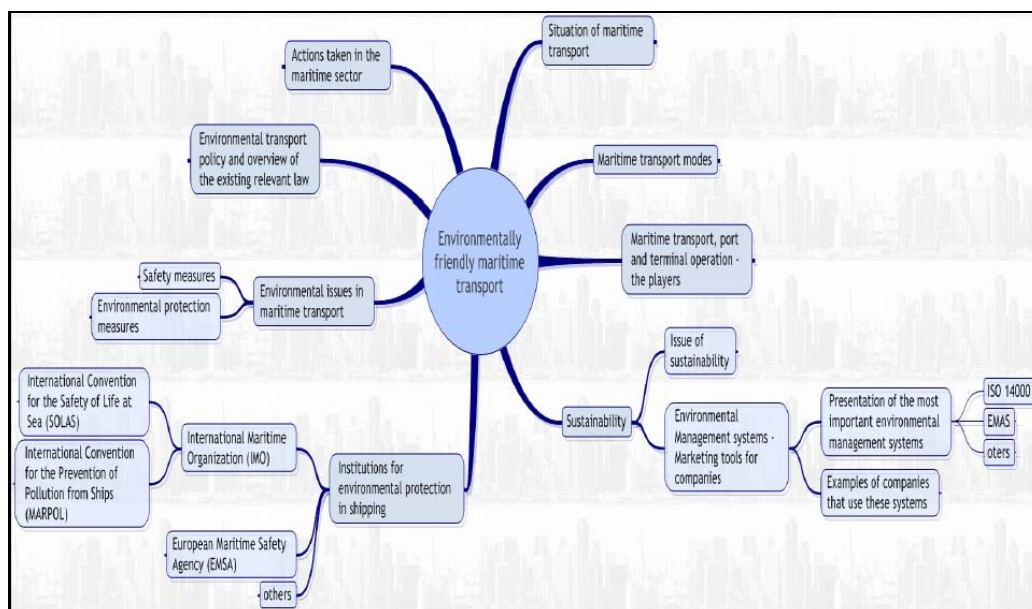


Figure 5: More detailed draft concept of the e-learning module.

At present the University of Applied Sciences in Kiel is working on unfolding the three topics of environmental issues in maritime transport, institutions for environmental protection in shipping, and sustainability, in order to have a beta version of the e-learning module ready for testing.

Invitations to the “10. Kieler Seminar zu aktuellen Fragen der See- und Küstenschifffahrt” to be held on 2-3 November 2006 in Kiel were also handed out.

### (f) Environmental Impact Assessment

The Swedish Environmental Research Institute IVL has under the SUTRANET project worked on constructing a working paradigm for an Environmental Impact Assessment (EIA). Relevant environmental aspects, that are to be considered in EIAs, as well as relevant environmental and generic aspects for transports and the North Sea Region have been identified.



Using the Port of Gothenburg as a case, an EIA has been conducted for two scenarios; a baseline scenario with no port expansion of the Port of Gothenburg, and a port expansion scenario where a doubling of the harbour traffic within the next ten years is expected.

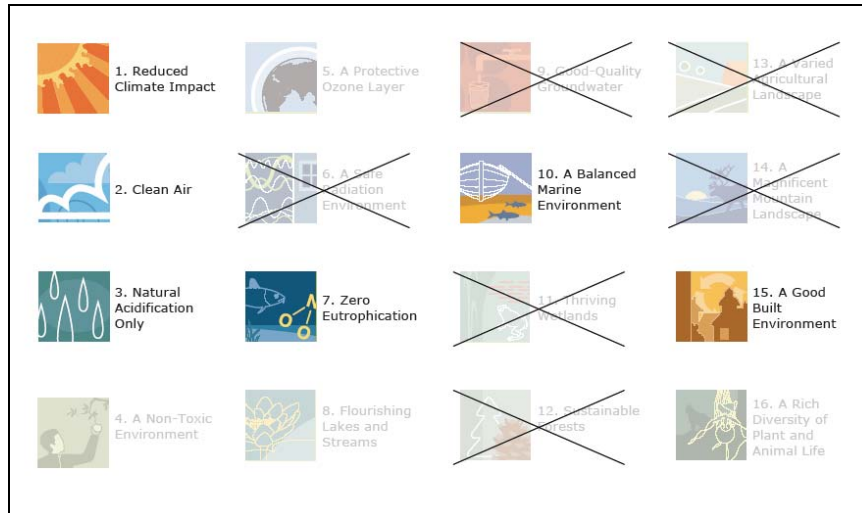


Figure 6: Relevant and generic environmental effects of transports in the NSR

The relevant and generic environmental effects of transports in the North Sea Region fall into six distinct categories; reduced climate impact, clean air, natural acidification only, zero eutrophication, a balanced marine environment, and a good built environment. These six distinct categories were evaluated in the EIA for the Port of Gothenburg, and although the expansion scenario clearly indicated detrimental impacts on four of the six categories, IVL has come up with some recommendations for alleviating some of the consequences of a port expansion.

In addition to working on EIAs for transport in the NSR, IVL has worked on developing and integrating a Ship Air Emission calculation tool as part of EIAs. This tool will be able to differentiate between 14 types of ships, 9 types of engines, 3 types of fuels and 6 types of abatement equipments, and the tool will be updated with the most recent research data from the EU ARTEMIS-project and IVL/ENTEC-data.

A working beta-version is expected to be finalised by the end of 2006.

### (g) Transport Corridor and Stakeholder Interviews

Preliminary conclusions from the stakeholder analysis indicate that the different stakeholders are primarily committed to promoting their own type of transport modality. Every stakeholder has a strong vested interest in maximising transport volumes in his own network of routes and transfer points, making a transition towards more intermodal transport solutions more difficult. In addition to embedded interests towards optimising individual networks and transfer points, a major barrier for further development and promotion of intermodal transport solutions is the organisational coordination between transport actors, which seems to favour a conservative approach to transport solutions.

The next steps concerning the stakeholder analysis will be to finalise the analysis of the interviews and compile a working paper in order to present the results at a user group workshop in the beginning of 2007. Results from the stakeholder analysis and the user group workshop will be included in the development of scenarios for the transport corridor involving Jutland.

## **(h) Spatial Development Perspectives and North Sea Transport**

Some of the overall aims of the workshop were to present the status and results of the WP1 activities and outputs so far, to exchange findings, to identify the main issues to address, and to specify the remaining activities including any corrective measures.

Returning to the overall goals for Work Package 1 as a whole, five distinct goals could be identified. These are:

1. To specify a common terminology (concepts, maritime transport system definitions, and sustainability criteria).
2. To elaborate a first step of a common information system for unitised goods transport flows and traffic, with a particular focus on goods handling via North Sea ports and maritime routes.
3. To develop environmental impact assessment tools for port development and maritime traffic.
4. To elaborate framework guidelines for transport flow modelling aimed at policy decision support.
5. To illustrate the scenario building methodology through selected case descriptions.

On the way towards specifying a common terminology, three papers have been put forward so far: Transport Systems Concepts and Definitions, Regional Development Perspectives and Concepts in the North Sea Region, and North Sea Region Transport and the Environment. Some final comments and minor revisions to these papers are to be expected, but on the whole these papers are completed.

In elaborating a first step of a common information system for unitised goods transport flows and traffic, with a particular focus on goods handling via North Sea ports and maritime routes, two papers have been prepared: Statistics Report Denmark – Unitised Goods via Ports in Denmark, and Unitised Goods via Danish Ports in 2004 and the North Sea Region. Further work within this subject is to be expected.

The development of environmental impact assessment tools for port development and maritime traffic has so far yielded a nearly complete beta-version of a ships air emission tool and a completed EIA for the Port of Gothenburg.

The elaboration of framework guidelines for transport flow modelling and the illustration of the scenario building methodology has so far resulted in draft versions of two papers: Unitised Goods Transport Scenarios in the North Sea Region, and Modelling Framework Guidelines. Both papers need to be revisited and further elaborated.



Finally the work conducted within Work Package 1 of SUTRANET has led to a tentative sixth overall goal of the work package; namely to explore possibilities and barriers for the development of intermodal transport systems for freight transport between Scandinavia and the Continent via the transport corridor including Jutland. This goal will primarily rely on data from the stakeholder analysis, which was carried out during April-September 2006.

## 6. THE SUTRANET PROJECT

SUTRANET (Sustainable Transport Research & Development Network in the North Sea Region) is a project funded under the EC Interreg IIIB North Sea Programme. The vision of SUTRANET is to improve the knowledge-base for developing efficient and sustainable transport networks in the North Sea Region.

The SUTRANET project consists of four work packages:

- North Sea Transport Research and Development Network
- Motorways of the North Sea
- Transport and Logistics Centres
- Training Programme Development

SUTRANET involves the following ten partner organisations, which include several of the main transport and logistics research institutes in Europe:

- Aalborg University (AAU) – Lead Partner, Denmark
- FDT – Association of Danish Transport and Logistics Centres
- Institute of Shipping Economics and Logistics (ISL), Bremen Germany
- Institute of Transport Economics (TØI), Oslo Norway
- SINTEF Technology and Society, Trondheim Norway
- University of Applied Sciences, Kiel Germany
- Møreforskning Molde, Norway
- IVL Swedish Environmental Research Institute, Gothenburg Sweden
- Napier University Transport Research Institute, Edinburgh Scotland
- Erasmus University, Rotterdam The Netherlands

**For further information on the SUTRANET Project please consult the website:**  
[www.sutranet.org](http://www.sutranet.org)